P-201 - ANTIADHESIVE AND ANTIBIOFILM EFFECT OF MALVIDIN -3-GLUCOSIDE AND MALVIDIN-3-GLUCOSIDE/NEOCHLOROGENIC ACID MIXTURES UPON STAPHYLOCOCCUS

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Background
Anthocyanins are water soluble pigments that have been frequently associated with a vast array of potential biological properties like immunomodulatory effects, antioxidant capacity or as an antimicrobial agent. While there are several studies demonstrating the antimicrobial effect of anthocyanin rich extracts, few works can be found reporting on the antimicrobial activity of pure anthocyanins. Moreover, works regarding these compounds focus on planktonic state cells disregarding the effects upon biofilms (the most common form for bacteria to be found in nature) and bacterial adhesion (an essential step for infection to occur). Therefore, the present work aimed to determine the effects of malvidin-3-glucoside, a major component of a previously reported extract [1] and the impact of its association with neochlorogenic acid (the only non-anthocyanin phenolic present in said extract), upon Staphylococcus.

Method
A group comprised of 6 different Staphylococcus with varying resistance profiles was used to screen for the antimicrobial activity of malvidin-3-glucoside and a malvidin-3-glucoside/neochlorogenic acid mixture.

Results & Conclusions
While no significant inhibition of staphylococcal growth was observed, both malvidin-3-glucoside and malvidin-3-glucoside/neocholorgenic acid possessed an interesting antibiofilm activity (with reductions of biofilm entrapped cells up to 2.5 log cycles, metabolic inhibition rates up to 81% and up to 51% of biomass inhibition). When considering the bacteria's capacity to adhere to plain polystyrene surfaces the inhibition ranges were considerably lower than those observed for polystyrene surfaces coated with plasmatic proteins was considerably higher (45% for adhesion in the presence of extract and 39% for adhesion after the surface was exposed to extract). Overall, the tested compounds, while relatively ineffective in inhibiting the growth of staphylococci were capable of hampering both biofilm formation and bacterial adhesion.

References & Acknowledgments
References:
[1] Silva et al. 2016. Journal of Applied Microbiology 121(3):693-703

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